

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 11888PC2-ADC/HMG	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/AU2004/000575	International filing date (<i>day/month/year</i>) 30 April 2004	Priority date (<i>day/month/year</i>) 30 April 2003
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ G01C 21/34, G08G 1/0968, G06F 165:00		
Applicant NEXTSPACE TECHNOLOGIES PTY LTD et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of **3** sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (*sent to the applicant and to the International Bureau*) a total of **6** sheets, as follows:

☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 28 February 2005	Date of completion of the report 12 April 2005
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer MICHAEL HALL Telephone No. (02) 6283 2474

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/AU2004/000575

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1 (b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
 - ☐ the international application as originally filed/furnished
 - ☒ the description:
 - pages 1-3, 6-18 as originally filed/furnished
 - pages* 4-5 received by this Authority on 28 February 2005 with the letter of 28 February 2005
 - pages* received by this Authority on with the letter of
 - ☒ the claims:
 - pages as originally filed/furnished
 - pages* as amended (together with any statement) under Article 19
 - pages* 19-22 received by this Authority on 28 February 2005 with the letter of 28 February 2005
 - pages* received by this Authority on with the letter of
 - ☒ the drawings:
 - pages 1-10 as originally filed/furnished
 - pages* received by this Authority on with the letter of
 - pages* received by this Authority on with the letter of
 - ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to the sequence listing (*specify*):

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/AU2004/000575

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-22	YES
	Claims	NO
Inventive step (IS)	Claims 1-22	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-22	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

Citations

D1 : US 2001/0020213

D2 : US 2003/0060978

NOVELTY (N) AND INVENTIVE STEP (IS)

Claims 1, 16: D1 teaches apparatus for calculation and navigation of an optimal route, where a GPS system is used to input a first location, a user inputs a second location, the optimal route between the locations is generated based on stored geographic information, and a series of suitably scaled maps, showing portions of the optimal route, are displayed in dependence on the user's current location (eg, paragraphs 126-138 and Figures 3-7 of D1). D2 teaches apparatus for calculation and navigation of an optimal route, where a user inputs a departure and destination location within a building, the optimal route between the locations is generated based on stored geographic information, and a series of guiding images are displayed as the user moves between the locations (eg, paragraphs 69-94 and Figures 1-9 of D2).

However, no obvious combination of the prior art teaches or suggests calculating an optimized route between at least three locations and generating a corresponding series of images, as per the claims. Hence the claims are novel and have an inventive step.

INDUSTRIAL APPLICABILITY (IA)

The subject matter of the claims is applicable to the implementation of vehicle navigation systems.

SUMMARY OF THE INVENTION

In one form, although it need not be the only or indeed the broadest form, the invention resides in a method of generating an optimized route between at least three locations comprising a starting location and at least two destinations, said method including the steps of:

(a) identifying the at least three locations;

(b) converting the locations into data representative of said at least three locations by reference to a store of geographic data;

(c) calculating an optimized route between the starting location and the at least two destinations on the basis of said representative data; and

(d) generating a series of images, each image of said series comprising a part of the optimized route between two of the identified locations.

Suitably, step (b) includes determining longitude and latitude coordinates representing each location by referring to a look-up table.

Preferably, step (d) includes automatically scaling each image on the basis of the part of the optimized route to be generated on said image.

Suitably, the method further includes the step of storing each point along the optimized route in terms of longitude and latitude coordinates.

Preferably, automatically scaling each image further includes determining maximum and minimum longitude and latitude coordinates of the optimized route.

Optionally, the method further includes the step of splitting an image into two or more images where a scale of the image renders information of the image unclear or illegible to a user.

Suitably, a user may select one or more features along the optimized route at which to split the image.

Suitably, the method further includes the step of generating one or more advertisements on one or more parts of one or more of the images.

Preferably, selection of the one or more advertisements is on the basis of a region represented by the image.

5 Suitably, starting location and/or at least one destination of the optimized route are automatically specified prior to calculating the optimized route.

Optionally, the method further includes the step of specifying one of said at least two destinations to be the first destination of the optimized route.

Suitably, each image is a map printed onto printable media.

10 Optionally, step (a) includes specifying a customer identifier to identify at least one of the locations by reference to a store of customer data.

In another form, the invention resides in an apparatus for generating an optimized route between at least three locations comprising a starting location and at least two destinations, said apparatus comprising:

15 processing means coupled to be in communication with:

input means for identifying the at least three locations;

storage means for storing geographic data;

20 a data handling engine for converting the locations into data representative of said plurality of locations by reference to said storage means;

a route calculating engine for calculating an optimized route between the starting location and the at least two destinations on the basis of said representative data;

25 an image rendering engine for generating a series of images, each image of said series comprising a part of the optimized route between two of the identified locations; and

output means for outputting said series of images.

CLAIMS:

1. A method of generating an optimized route between at least three locations comprising a starting location and at least two destinations, said method including the steps of:

5 (a) identifying the at least three locations;

(b) converting the locations into data representative of said at least three locations by reference to a store of geographic data;

(c) calculating an optimized route between the starting location and the at least two destinations on the basis of said representative data; and

10 (d) generating a series of images, each image of said series comprising a part of the optimized route between two of the identified locations.

- 15 2. The method of claim 1, wherein step (b) includes determining longitude and latitude coordinates representing each location by referring to a look-up table.

- 20 3. The method of claim 1, wherein step (d) includes automatically scaling each image on the basis of the part of the optimized route to be generated on said image.

4. The method of claim 1, further including the step of defining each point along the optimized route in terms of longitude and latitude coordinates.

5. The method of claim 3, wherein the step of automatically scaling each image further includes determining maximum and minimum longitude and latitude coordinates of the optimized route.
- 5 6. The method of claim 1, further including the step of splitting an image into two or more images where an automatically determined scale of the image renders information of the image unclear or illegible to a user.
- 10 7. The method of claim 6, further including the step of a user selecting one or more features along the optimized route at which to split the image.
8. The method of claim 1, further including the step of generating one or more advertisements on one or more parts of one or more of the images.
- 15 9. The method of claim 8, further including the step of selecting one or more of the advertisements on the basis of a region represented by the image.
- 20 10. The method of claim 1, wherein the starting location and/or at least one destination of the optimized route are automatically specified prior to calculating the optimized route.
- 25 11. The method of claim 1, further including the step of specifying one of said at least three locations to be the first destination of the optimized route.

12. The method of claim 1, wherein step (c) includes preserving an order of the at least three locations and optimising the route between each location.

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13. The method of claim 1, wherein each image is a map printed onto a separate sheet of printable media.

14. The method of claim 1, wherein each image is a visual electronic representation of a map stored on a portable electronic device.

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15. The method of claim 1, wherein step (a) includes specifying a customer identifier to identify a location by reference to a store of customer data.

16. An apparatus for generating an optimized route between at least three locations comprising a starting location and at least two destinations, said apparatus comprising:

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processing means coupled to be in communication with:

input means for identifying the at least three locations;

storage means for storing geographic data;

a data handling engine for converting the locations into data representative of said at least three locations by reference to said storage means;

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a route calculating engine for calculating an optimized route between the starting location and the at least two destinations on the basis of said representative data;

an image rendering engine for generating a series of images, each image of said series comprising a part of the optimized route between two of the identified locations; and

output means for outputting said series of images.

17. The apparatus of claim 16, wherein said storage means comprises a look-up table of longitude and latitude coordinates representing each location.

18. The apparatus of claim 16, further comprising a scaling engine for automatically scaling each image on the basis of the part of the optimized route to be represented on said image.

19. The apparatus of claim 16, further comprising a store of customer data to identify at least one of the locations on the basis of a customer identifier.

20. The apparatus of claim 16, further comprising an advertising engine for selecting one or more advertisements to be added to one or more images.

21. The apparatus of claim 16, wherein said input means is a graphical user interface.

22. The apparatus of claim 16, wherein said input means is a touch sensitive screen.